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MEMORANDUM FOR: ES/SAAC

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FROM:

Chief, Plans and Program Staff

SUBJECT: Employee Suggestion No. 80-211
Energy Conservation (Window Shutters)

1. The suggestion accurately points out that the Headquarters building, similar to virtually all buildings in the U.S., was designed and constructed during times when energy conservation did not command the urgency it does today. Energy is now expensive, both economically and politically, and the nation is now struggling to establish control on the expenditure of energy. Applicable to the suggestion, the DOE and the GSA, in cooperation with this Agency, are analyzing the alternatives to retrofit our buildings to best achieve energy saving objectives.

2. The Headquarters building is under GSA control. The GSA is responsible to the DOE to achieve energy saving goals through improved operating procedures and through the capital expenditure for energy efficient equipment. Our Agency is responsible to insure our support requirements consider the need to conserve, and we are responsible to cooperate with the GSA in identifying and implementing policies, procedures and ideas. The DOE, the GSA and the Agency have been active over several years in the energy area, there are numerous committees, a plethora of ideas, and energy saving options literally inundate the resources available for study and implementation. The DOE publishes hundreds of options for consideration, and requires the GSA to perform an energy audit of buildings. The audit is to form the foundation for the systematic implementation of prioritized energy saving projects, as the audit identifies costs, energy savings and payback periods for each option. This audit has been done, and has included the following specifics for windows:

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- a. Double glazing
- b. Triple glazing
- c. Solar films on windows
- d. Blinds, drapes, shades, louvers and screens

In analyzing the above options, the following was recommended by the consultant: "Whichever option is chosen for window treatment should not depend on individual control for the energy savings to be realized." It should be noted that significant savings could now be realized if individual occupants could be depended on to use the blinds and curtains presently installed to conserve energy. In installations where draperies are automated, individuals tend to override the controls in order to meet their own needs, similar to the constant attempt to adjust thermostats in the Headquarters building to meet individual temperature preferences.

3. The GSA and engineers from RECD/OL are working together in analysing the audit report while concurrently implementing projects achievable with existing resources; therefore, the consultant's recommendation concerning the dependency on occupants to save energy is under review.

4. The above narrative is presented as background information, primarily to identify that the energy conservation field is dynamic with ideas everywhere, and that the challenge is to systematically and competitively rank options and thereby institute a program consistent with national goals and internal resources. The narrative is also presented to indicate that the concept of shutters was considered, but not in detail because they depended on the cooperation of the individual occupants of windowed rooms. Shutters may be chronologically premature in that there is not yet universal agreement on the depth and severity of the energy crisis, whether the crisis is real or political, and there is no agreement as to what degree of "bleeding" is fair and necessary. Experience has been that people are not terribly cooperative on voluntary inconveniences. In any event, the energy audit did identify numerous energy saving projects with higher priority for our limited capabilities (resources) than window glazing, films, blinds, drapes, shades, louvers and screens, although some window modification will eventually be accomplished. FYI, given the revised operating procedures of lower wintertime building temperatures, higher summertime temperatures, securing perimeter units at night and better heating, ventilating and air conditioning control, the consultant identified relatively long pay back periods for window attention, other than caulking.

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5. The above suggests it would be most difficult to evaluate the suggestion on the basis of tangible savings because it is but one option among hundreds, its premise has been rejected because effectiveness is dependent on the cooperation of room occupants, and the suggestion is not competitive with other options immediately competing for our limited resources. Analysis of the specifics of the suggestion clearly lead to a recommendation to decline because of the following:

- a. The construction as identified in the suggestion could not be approved by the OS because fiberglass/Styrofoam represents a fire/safety hazard.
- b. Achieving an air tight seal would be considerably more difficult and expensive than implied in the suggestion.
- c. Aesthetics would be controversial, also achieving the cooperation of personnel to close the shutters could be a problem.
- d. The shutters would protrude into the room, assuming the blinds would remain and the curtains removed (blinds necessary for summertime reflection of sunlight to reduce heat gains). However, safes and furniture cover a portion of a high percentage of the windows, precluding the full opening of the shutters. It is anticipated shutters would be damaged by hitting safe edges, etc. Maintenance costs are difficult to estimate, but experience would demand that the shutters be fabricated and installed to be extremely durable, or damage and maintenance costs will be high.

6. With elevated summertime building temperatures and the nighttime securing of our perimeter systems and select air conditioning systems, summertime savings through use of the shutters would not be significant and, on balance, may even be negative -- re, the shutters may prevent some building heat from escaping to the cooler nighttime outside air. It may be noted that 80% of the sun's heat load is via radiation transmitted directly through the glass to the interior; therefore, significant summertime savings could be achieved by keeping the shutters closed when the sun is out, but it is doubtful that our personnel would be willing to voluntarily transform their windowed offices into, in essence, an interior room via closing the shutters.

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7. In summary, the design and custom manufacture and installation of a durable, efficient and safe shutter would be considerably more difficult and expensive than identified in the suggestion (additionally, manufacturer and installation would be via GSA contract, with attendant overhead charges). The installation would be aesthetically controversial and energy effectiveness would depend on the cooperation of office occupants. The costs and benefits in competition with other options to save energy lead to the recommendation that this suggestion be declined for use in the Headquarters building at this time. If energy continues to become more scarce and expensive at the present rate, and if requirements to reduce energy consumption by a percentage each year continues, and as the more effective alternatives become implemented, then no doubt some form of window treatment will be done.

8. The use of shutters over double or triple glazing, blinds, draperies, etc., would depend on the attitude of our personnel at that time, their cooperativeness, and the relative costs involved. The time for shutters as a retrofit option has not yet come, but may be here in the future.

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FILE OR SUBJECT OF SUGGESTION

Energy Conservation (Window Shutters)
at Hqs and other CIA Federal Bldgs

SUGGESTION NO.

80-211

PRESENT METHOD

See Attachment

SUGGEST

See Attachment

ADVANTAGES

See Attachment

FORM 244
(3-79)USE PREVIOUS
EDITIONS

CLASSIFY AS APPROPRIATE

☐ DCL ☐ RVW _____
DRV _____ BY _____

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